

# MATH\*1160 Course Outline (Winter 2022)

## Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

Instructor: Daniel Kraus

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**Office Hours: Tues./Thurs. 11:00am – 1:00pm (virtual)**  
**(feel free to email me to schedule alternate virtual meetings)**

## Section 01

Class\*: M/W: 3:30pm – 4:20pm, ROZH 103

*\*A 3<sup>rd</sup> lecture will be provided each week for this section via pre-recorded video*

## Section 02

Class: M/W: 5:30pm – 6:50pm, THRN 1200

**The first two weeks of classes are scheduled to be ONLINE ONLY. Please refer to the schedule posted to CourseLink to see which sections will be covered. Videos are available via CourseLink.**

**Prerequisite:** 4U Calculus and Vectors or 4U Advanced Functions

**Restrictions:** ENGG\*1500, MATH\*2150, MATH\*2160.

**Credit Weight:** 0.50

**Academic Department:** Mathematics & Statistics

**Campus:** main

**Semester Offering:** Winter

**Teaching Assistants:**

<b>Bryson Boreland</b> <a href="mailto:bborelan@uoguelph.ca">bborelan@uoguelph.ca</a>	<b>Graham Eckel</b> <a href="mailto:geckel@uoguelph.ca">geckel@uoguelph.ca</a>	<b>Mujtaba Elkhaliifa</b> <a href="mailto:elkhalif@uoguelph.ca">elkhalif@uoguelph.ca</a>
<b>Prabhjot Kaur</b> <a href="mailto:pkaur07@uoguelph.ca">pkaur07@uoguelph.ca</a>	<b>Qi Li</b> <a href="mailto:gli15@uoguelph.ca">gli15@uoguelph.ca</a>	<b>Xiangxu Ruan</b> <a href="mailto:ruanx@uoguelph.ca">ruanx@uoguelph.ca</a>
	<b>Mukesh Taank</b> <a href="mailto:mtaank@uoguelph.ca">mtaank@uoguelph.ca</a>	

## 1 Course Notes:

- **Workbook for this course:** Students must buy the 'fillable' lecture notes for this course at the University Bookstore (cost about \$25). You can either order the Workbook from the bookstore website (sent in a couple of days) or go to the bookstore and buy it in person. No additional textbook is required.
- **Math Preparedness Booklet:** You should work through this booklet during (or before) the first week of class. It is found in the Content section in Courselink.
- **In-class Discoveries:** These are investigations that you do during the lectures and can be found in the Content section in Courselink.

## 2 Online lectures:

The third lecture each week **for Section 01 only** will be fully online as asynchronous (pre-recorded) videos on YouTube. Links to these lectures will be posted on Courselink during each week. It is the students' responsibility to keep up with these lectures if registered for that section. In the event of a drastic shift in course delivery due to COVID-19, all remaining lectures will be delivered this way.

## 3 What to bring to class:

- The fillable lecture notes that you bought at the University Bookstore.
- Discoveries (see Content section in Courselink).
- Blank paper, pens/pencils.
- Scientific calculator.

## 4 Class Schedule:

Posted in the Content section of Courselink

## 5 Calendar Description:

This course provides an introduction to linear algebra in Euclidean space. Topics covered include: N-dimensional vectors, dot product, matrices and matrix operations, systems of linear equations and Gaussian elimination, linear independence, subspaces, basis and dimension, matrix inverse, matrix rank and determinant, eigenvalues, eigenvectors and diagonalization, orthogonalization and projections, linear transformations. Some fundamental proofs and applications of these topics will be included.

## 6 Learning Outcomes:

- Have a basic understanding of the algebra of matrices
- Understand how linear algebra is needed to work with systems of linear equations
- Be familiar with some applications of linear algebra

- Have a basic understanding of some theoretical linear algebra concepts, including proof.
- Have gained some experience in using computer software to manipulate matrices

## 7 Homework:

Both the homework problems and solutions are found in the Content section of Courselink and will (along with class examples) be the basis for the tests and final-exam questions. For this reason, it is very important that you do the homework and follow up with your instructor if you have problems.

## 8 Tests and exam times:

Exams are based mainly on examples done in class and homework. A minor component may involve MATLAB applications.

- 25% Midterm Test 1: Monday, February 14, in class
- 25% Midterm Test 2: Monday, March 14, in class
- 50% Final Exam (cumulative): Monday, April 25, 11:30am – 1:30pm, Room TBA

## 9 Teaching Assistants and Test Corrections

The teaching assistants (TAs) grade the tests and provide 3 office hours per midterm for corrections and answering questions about grading (schedule announced via email). TAs sign the midterms they grade so you know who graded your midterms. If you think an error was made during grading, please see the TA who graded your test (NOT YOUR PROFESSOR!) to have your test score adjusted. If you find errors in grading and you miss the office hours offered by the TAs, then email the TA to schedule an appointment. However, as the TAs are only paid for a limited number of hours, **IF YOU MISS THE TA OFFICE HOURS THERE IS NO GUARANTEE THAT A TA WILL BE ABLE TO SEE YOU TO MAKE TEST CORRECTIONS. TEST CORRECTIONS CANNOT BE MADE AFTER THE FINAL EXAM.** It is in your best interests to check through your tests in a timely manner with the solutions provided.

## 10 Picking up midterms

Graded midterms will be handed back in lecture. Uncollected midterms will be stored in the instructor's office until the end of the semester.

**ONCE THE FINAL EXAMINATION DATE HAS PASSED, ALL MIDTERMS WILL BE SHREDDED.**

## 11 The Math & Stats Learning Center:

The Mathematics & Statistics Department operates a learning center where you'll find a team of tutors that can help you understand and solve problems in MATH\*1160. For the duration of the Winter 2022 semester, the learning center will operate virtually. You will have access to it via Courselink. The hours of operation are as follows:

Monday	Tuesday	Wednesday	Thursday	Friday
9:30-15:30	10:00-16:00	9:30-15:30	10:00-16:00	9:30-14:30

**12 Test preparation checklist:**

Posted in the Contents section of Courselink.

**13 Tentative outlines for the midterms and final exam:**

Posted in the Contents section of Courselink.

**14 Practice (past) tests:**

Posted in the Contents section of Courselink.

**15 Tests and solutions for this year:**

Posted in the Contents section of Courselink when ready.

**16 Texts recommended for background reading:**

One recommended book is:

- Bernard Kolman & David R. Hill: Elementary Linear Algebra with Applications, Pearson/Prentice Hall, 9<sup>th</sup> Edition, ISBN-13: 978-0-13-229654-0.

**17 Attendance:**

Formal attendance will not be taken. However, I *strongly* encourage you to attend class regularly. **IF YOU ARE UNABLE TO ATTEND CLASS, IT IS YOUR RESPONSIBILITY TO FIND OUT WHAT YOU MISSED FROM YOUR CLASSMATES. DON'T EMAIL YOUR INSTRUCTOR ASKING FOR NOTES.**

**18 Email Etiquette:**

I try to respond to all email messages in a timely manner. Math questions may be better answered in person or via virtual meeting. Please keep your messages to the point and polite, and clearly state your question, with name, student ID, and course details.

**19 Exam policies:**

- All exams are **closed book**. You may not use your notes or any other outside material. Do not bring your own scratch paper.
- You are not allowed to use laptop computers or cellphones during exams. Ordinary scientific (NOT graphing) calculators are permitted during exams.
- The Final Exam is cumulative, i.e., it covers the whole course material.

**20 Academic consideration:**

- There will be **NO MAKE-UP MIDTERM EXAMS**. If you miss a Midterm exam due to serious illness of yourself or a death in your immediate family, or due to personal grounds, please contact me by email ASAP explaining the reason for missing the test.

You do NOT need to get a doctor's note. If consideration is granted, I will readjust the weight of assessed material, as described in the next section. HOWEVER, ONCE YOU HAVE TAKEN AN EXAM, NO ACCOMMODATIONS WILL BE GRANTED (it is a general University of Guelph procedure to NOT grant accommodations retroactively). For further details concerning Academic Consideration see

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

- UNDER NO CIRCUMSTANCES WILL ANY EXAM BE RE-SCHEDULED AT A DIFFERENT TIME AND/OR DATE FOR INDIVIDUAL STUDENTS, with the possible exception of exams taken in SAS.
- Athletes who compete away from the University of Guelph during a midterm exam can arrange for their coach to proctor their exam. Just get your coach to contact me, and we will make the arrangements.
- If you miss the final exam due to catastrophic events such as serious illness of yourself or death of your immediate family, you will receive an "Incomplete" grade, and then (depending on circumstance) you may be allowed to take a make-up exam to receive a letter grade. If you miss the final exam, you should (a) inform me by email, and (b) contact your program counselor for advice.

## **21 Procedure used to re-adjust the weight of assessed material:**

If consideration is given to miss an exam (see item 20 above), the percentage of missed material is moved to the final exam. Please DO NOT ASK FOR ALTERNATE ARRANGEMENTS, AS FOR REASONS OF FAIRNESS TO OTHER STUDENTS, IT WILL NOT BE GRANTED:

- **Scenario 1:** Consideration is granted to miss one midterm  
Assessment procedure: the final exam will contribute 75% to your final grade.
- **Scenario 2:** Consideration is granted to miss both midterms  
Assessment procedure: the final exam will contribute 100% to your final grade.

## **22 Regulations regarding seeing your final exam:**

If you wish to see your final exam, you must submit your **written** request to the chair of the department by the 5th class day of the new semester. For more details, see

[https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/sec\\_d0e7195.shtml](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/sec_d0e7195.shtml)

If you are granted permission to see your final exam, you will be provided with your written solutions.

## **23 Regulations regarding a grade-reassessment:**

If you believe that an error has been made in the determination of your final grade then you must **write** to the chair of the department (by the 10th class day of the new semester) requesting a grade re-assessment. This can lead to the grade staying the same, a grade increase, or a grade decrease. Please note that this should not be used as a means of

'trying to get a few extra marks', but for situations where you have grounds for believing that mistakes have been made in the determination of your final grade. Remember also that your final exam is multiple choice and graded by a computer. Furthermore, THE CHOICES MADE ON THE BUBBLE SHEET TAKES PRECEDENCE OVER THE CHOICES CIRCLED IN THE QUESTION BOOKLET (we only refer to your circled choices in the question booklet if for some reason there is an error on the bubble sheet). For further information, see <https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

#### **24 Academic Accommodation of Religious Obligations**

If you are unable to complete a course requirement due to religious obligations, please let the instructor know within the first two weeks of class. See the academic calendar for more information:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml>

#### **25 Academic Misconduct:**

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>.

## **University Statements**

#### **26 Email Communication**

As per university regulations, all students are required to check their e-mail account regularly. E-mail is the official route of communication between the University and its students.

#### **27 When You Cannot Meet a Course Requirement**

When you find yourself unable to meet an in-course requirement because of illness or

compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

## **28 Drop Date**

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-regregchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

## **29 Copies of Out-of-class Assignments**

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## **30 Accessibility**

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 14 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website  
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

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Undergraduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

### **32 Recording of Materials**

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

### **33 Resources**

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma



programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

### **34 Illness**

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

### **35 Covid-19 Safety Protocols**

For information on current safety protocols, follow these links:

<https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-yoursafe-return/>

<https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.